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Abstract:

GIS Live is a live, interactive, web problem-solving (WPS) program that partners Geographic Information Systems (GIS) professionals with educators to implement geospatial technologies as curriculum-learning tools. It is a collaborative effort of many government agencies, educational institutions, and professional organizations. Problem-based learning challenges that engage teachers and students in the use of real-world technology tools and research, publishing and presentation of their work for a real audience via the internet and telecommunications connects schools with partners from around the world. It has been found that through these community partnerships, teachers and students in schools are able to successfully engage in many projects that better connect them to where they live. Teachers and students became excited when they were able to share these projects with others via the World Wide Web. Those who have participated in GIS Live are convinced that this method of teaching and learning has great potential and tremendous future impact for education.

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Introduction

GIS Live is the State of North Carolina's answer to the increasingly important question of how to help educators bring hands-on geography to their students. Harnessing the immense power of the Web, Geographic Information System (GIS) professionals and university researchers team with teachers and their students to share real-world applications of the latest geotechnologies and explore how these tools can be used for outstanding interdisciplinary, real-world relevant teaching and learning. GIS Live is an example of the effective application of telecommunications and web-streaming technologies to provide new opportunities for teacher and student learning. In addition, these technologies provide a means of sharing that help bridge distances and have allowed for increased and world-wide participation.

GIS Live resulted from a partnership between North Carolina State University's Department of Math, Science and Technology and the College of Natural Resources, the NC Department of Public Instruction's Distance Learning Section, and the North Carolina Center for Geographic Information Analysis (NCCGIA). The partnership is supported by many other agencies and professional organizations such as the GIS Departments of Wake County and the Town of Cary, NC Department of Environment and Natural Resources, the State Center for Health Statistics, NC Geodetic Survey, NC Museum of Natural Sciences, and the NC Urban and Regional Information Systems Association. A steering committee met monthly to collaborate on the design, evaluation, and theme of each year's event. The event occurred concurrently throughout the year with other national and international events such as GIS Day, National Geography Awareness Week, and Earth Science Week.

GIS Live uses the North Carolina Information Highway (NCIH) which interfaces with the North Carolina Research and Education Network (NC-REN). This network is a multi-site, multi-channel, interactive network that connects universities, medical schools, high schools, community colleges, and many other state organizations in North Carolina. An example of video applications which are supported over the network include distance learning for K-12 and higher education, state agency meetings, statewide training activities, emergency response assistance, and public hearings. The streaming service (webcasting) enables broadcasting of the live event over the Internet. Hundreds of users are able to watch a live event over the web by using Real or Windows Media players on their computer. During the live events, those watching over the Internet can participate by asking questions via a message board. In addition, the streaming video is archived so that others can participate in the event over and over again. The Web site provides information on pre and post conference activities for schools as well as lesson plans for further extensions. Presentation materials and additional activities and ideas provided by the presenters are linked to the conference program. The GIS Live website has become a resource for teachers and students during its evolution of four years of events.

GIS Live is an example of a specific application of distance learning technologies in that it is not centered at one site as the source of information and activity. Instead, multiple teleconferencing sites are linked with a facilitator at each as they interact and share with

each other. At any one event, as many as 75 people participate at the different sites, focused around one theme or pre-planned activity.

Why GIS Live was Developed

The initiation of this event came from a need to unite the state in a celebration of GIS Day. GIS Day is an international event whose goal is to educate millions of children and adults about how geography makes a difference in our lives and to demonstrate GIS technology at schools and organizations around the world. The four premises that have emerged from this partnership in North Carolina include:

1. Due to federal school legislation, it is more important than ever that reading and literacy be at the center of learning. In addition, North Carolina will soon re-institute the testing of science. It is vital that teachers learn to integrate reading and literacy into their teaching of science. Technology, in general, and GIS in particular, is an effective vehicle for developing literacy-rich interdisciplinary projects.
2. Many teachers are being introduced to GIS and other technologies through staff development institutes. GIS Live is a unifying event that supports these new initiatives and gives teachers and students a vehicle for sharing their new knowledge and projects with others. Teachers can update their knowledge of the latest technologies and ways of applying them to develop interdisciplinary projects.
3. A vehicle for creating and maintaining school, community and business partnerships as a two-way system of communication and support that takes students out of the classroom and into their local communities and environments to do real and important work.
4. A way to provide teachers with ongoing on-line professional development in the latest technology tools for developing geography-based, interdisciplinary projects.

How was GIS Live Designed

Collaborations and interaction are important components of design, especially when using interactive technologies. According to Spence, Stubbs, and Huber (2000), combinations of technologies can support and enhance learning that can reinforce and motivate learning. Educational and state agencies were interested in working together to support teachers and students. They each brought their own areas of expertise and pledged their financial support to the project. Collaboration among the committee members, who met once a month via phone and teleconferencing, planned the design and implementation of the on-line conference and continuing development of the Web resource. With interaction and collaborations as goals, dedicated committee members of GIS professionals and educators supported teachers and students as they planned to present their interdisciplinary GIS school projects.

Each year, based on input from teachers, a theme for the conference was chosen (see Table One). Over the years, the theme became more focused. Year one's theme was GIS

partnerships and year two was using GIS to solve problems. Year three focused on a problem scenario called Autumn Breeze: Hurricane Zeus and year four was Open Places, Wild Spaces. In years one and two, we held an eForum for teachers after school. During the eForum, teachers experienced with GIS technologies shared how to create partnerships, design student internships and obtain funding. In year two, teachers in a college course at the University of Parana in Brazil presented their projects. In year three, we decided to hold a pre conference teleconference and webcast for schools to demonstrate problem-solving, GIS, and literacy integration in science instead of the eForum. During the pre conference, the city of Charlotte and Mecklenburg County team described Summer Breeze, a highly successful emergency response scenario and introduced Autumn Breeze, a role-play of how emergency response teams in their communities might respond to the threat of a Category 3 hurricane. This helped schools practice connecting to the event as they discussed their participation in the problem scenario. In year four, we traveled to schools to assist them with implementation of problem-solving and GPS into their classes. We created a video of their projects, which we aired during GIS Live. While at the schools, we answered questions regarding connecting, participating, and interacting during the live event.

In years one and two the Team Challenge was developed. The Team Challenge involved students conducting the Mapping Our School Site project (MOSS) (Hagevik, 1999) from 9:00 AM to noon outside in the butterfly garden at the Capitol. Students assisted by their teachers had conducted this project at their schools so they were demonstrating their expertise at the Capitol site. Naturalists assisted with the fieldwork and identification of plants and animals in the $10m^2$ plot. Students gave live reports throughout the day from outside. These reports were microwaved back to the videoconferencing site at the NC Department of Public Instruction's videoconferencing center and then streamed out to the web. In the afternoon, they used GIS to analyze their results and create maps which they then presented. In year one, four schools of middle and high school students worked together on the MOSS problem-solving project. In year two, students from the Saturday Program for Academic and Cultural Education (SPACE) participated. During year two, in addition to MOSS, students from Carnage Middle School presented their work on The Tumbleweed Project, a partnership with NCSU and NASA that involved designing a wind-driven sensor device with the goal of discovering life on Mars outside. Students were able to discuss their project with NASA's Jet Propulsion Lab in Pasadena, CA, to explain how navigation works when the destination is out-of-this-world. The two-way teleconference was so successful that the GIS Live event became a multi-teleconferencing event in years three and four.

All presentations at the conference focused on problem-solving and partnerships. For example, a teacher and her students presented their disease transmission detective project that they had done with Allyson Jason, a regional geographer for the USDA or meteorology projects that investigated student-generated climate questions by middle grade student interns who had partnered with the NC Climate Center. The committee partnered teachers requesting collaborators with local community agencies, including those out of state, as was the case with a teacher that had moved to Columbus, GA. In year three and four, as a result of requests from teachers, GIS careers were added to the

program. By this time, several students had received internships due to their new technology expertise.

The GIS Live website includes resources for teachers and students. A virtual field trip provides a scavenger hunt focused around events. Pre and post lessons for each presentation along with additional pre and post activities allow teachers to use the on-line conference as a virtual field trip. Many teachers have contributed lessons, ideas, and activities to this growing web resource.

Table 1: GIS Live Program Description

Program Themes	GIS Live 2002 GIS Partnerships	GIS Live 2003 Using GIS to Solve Problems	GIS Live 2004 Crossing Boundaries with GIS	GIS Live 2005 Open Places, Wild Spaces
Highlights	GIS Live Team Challenge -- MOSS Field Demo by middle grades and high school students and their teachers	Presentation on GIS and Meteorology by WRAL; Mars Rover Exploration by Project Navigator and Manager, from JPL in CA**;** GIS Live Team Challenge (MOSS) by SPACE students	Autumn Breeze: Hurricane Zeus Scenario (Collaboration with Mecklenburg County, Holmes High School, Columbus, GA**)**	GIS Live Team Challenge-- GPS and Geocaching
Participants	Participants from 3 countries (US, Canada, and India); 26 states registered	35 sustained streams reported; completed evals from -- NC, Tenn., Ark, SC, and Barranquilla, Columbia; Participation of 208 students reported.	5 videoconference sites: DPI, Raleigh; Mecklenburg County Health Dept., Charlotte; NC A&T, Greensboro; Holmes HS, Edenton; East Columbus Magnet, Columbus, GA; Roughly 55 sustained streams during the day	3 videoconference sites: NC Museum of Natural Sciences, NCA&T, Greensboro, Holmes HS, Edenton; roughly 40 streams during the day
Professional Development	eForum for educators from 3 to 5 pm	eForum for educators from 3 to 5 pm (Presenters included Brazilians from University of Parana.)	eForum held in October to help teachers prepare for the event.	eForum not held but individual school visits and production of videotape aired during event on using GPS in the classroom.

Problem-Solving

Presenters used the problem-solving framework to share information and their interdisciplinary projects. The steps include explaining what and why there is a problem, what would happen if the problem was solved in a variety of ways, what you did to find the best solution, and what are some other solutions (H. Stubbs, Devine, & Hagevik, 2002; H. S. Stubbs, DuBay, Anderson, Devine, & Hagevik, 1999; Swartz, 1996). A good example of this was the 2004 Hurricane Zeus problem scenario. The scenario begins that the National Weather Service has issued a hurricane warning in North Carolina. Hurricane Zeus, a very late season storm is off the coast of the Bahamas and is expected to come ashore as a Category 3 hurricane. The hurricane has wobbled in a loop in the Atlantic Ocean and is expected to make landfall in about 72 hours. The current size of the storm is 200 miles across with sustained winds around the eye of 110 miles per hour. It may pack rains of 4 to 10 inches as the storm moves through the area. We don't know whether its direct path will hit Wilmington, the Outer Banks or Charlotte. What could be the possible problems in your area if Hurricane Zeus comes your way? Think of how NC OneMap and GIS can help your community prepare for the storm and to solve problems that might arise as a result of its aftermath. Teachers and students then shared their solutions in their communities via teleconferencing and the web through maps, skits, interviews, and stories, which can be viewed through the archived video on the GIS Live site.

Assessment of GIS Live

Each year after the GIS Live event, a series of at least two meetings were held in which the committee, the GIS professional community, and teachers were asked to critique the event and offer suggestions for the next year. GIS Live is designed to introduce three concepts: 1) integrate reading and literacy into the teaching of science; 2) use of technology, particularly GIS, in teaching and learning; and 3) use of web problem solving inquiry. Electronic surveys were sent to past participants to evaluate each year's event. In addition, message board interactions and e-mail messages were evaluated. A select number of teachers and students who participated were interviewed. A report of outcomes, suggestions, and changes was presented each year to the NC Geographic Information Coordinating Council in the spring on last fall's event.

The multi-site concept provided access for educators and the public to the most qualified GIS professionals, scientists, and researchers on the themes of the event. In addition, environmental education professionals from organizations such as the zoo, museums, and environmental centers were able to share information about their programs and organizations. For example, American Forests (2007) shared their program, the *School Environmental Education Program* that provides professional development, software, curriculum, support, partnerships, and continued technical assistance. Teachers and students demonstrated their problem-solving projects that resulted from the program. Through telecommunications and the message board for those interacting via the Web, teachers, students, and the public were able to interact and ask questions of the presenters.

While it is difficult to document everyone who has attended GIS Live over the past four years, data indicates that at least twenty school systems and nine college and universities as well as other non-profit educational agencies or consortia such as Massachusetts Marine Educators, EAST (Environmental and Spatial Technologies) Education Initiative, a national project involving schools in Arkansas and California, CAST at the University of Arkansas, the SouthEast Center for Ocean Science Education Excellence (SECOSEE) and the Ohio Aerospace Institute have attended. Many of these agencies have helped us to publicize the event each year to educators, schools, and the public. In addition, the public is invited to be a part of the event at the teleconferencing sites. On-site registrations recorded those attending at the teleconferencing sites.

The most positive comments from teachers and students came from those that participated in the Team Challenge and Autumn Breeze: the Hurricane Zeus problem-solving scenario. The greater the interactivity, the more the students and teachers enjoyed the project. Some selected comments from teachers and students that participated include:

From the teacher who participated in Autumn Breeze from Columbus, GA: "The kids enjoyed it so much – the whole school watched and it seems like a different school. My classes seem to have a new confidence and other kids are looking forward to being a part of something like GIS Live. The atmosphere is changing – it is a bit hard to describe but nearly all of the kids, even those who just watched are much more interested in learning. No longer do they come in and just want to socialize. I know it sounds hokey but they have been telling other people about how much they are learning and how fun it is. I hope this lasts" (November 17, 2004).

From a participating MOSS teacher: "Using GIS has showed me how to take science outside and relate it to the local environment. It has shown me how to integrate technology into the science curriculum in a new and better way." (Nov. 20, 2002).

From a SPACE student who participated in the Team Challenge: "GIS should be a core subject" (Nov. 19, 2003).

From a student participating in the 2005 GPS Team Challenge: "We have moss on the trees and a lot of cool things. I realized that everything is linked together. Our animals need homes just like us. Observing in one spot helped me look better" (Nov. 15, 2005).

Interestingly the most positive comments from our web participants were those who wanted to join us at next year's event or were interested in using our model to create their own online conferences. In general, these participants asked how to learn more about GIS as a teaching and learning tool, how to network with colleagues that are using GIS, and ways to learn more about resources and grant opportunities. Some selected comments from those that viewed via the Internet include:

From our participating school in Columbia: "Thank you for the wonderful experience. We have had all our teachers and some high school students present at one time or another during the day and for us in Barranquilla, Colombia; it is a great opportunity to explore these learning opportunities. Please let us know when you have other conferences and if we can participate via videoconferencing with you too" (email communication from director, Nov. 19, 2003).

From Georgia: "Will these sessions be archived somewhere? They were wonderful…Would love to try some similar activities here…But I need to see/hear them again to catch the "how to's"! Thanks again for the tremendous amount of effort and education that occurred today" (email communication, Nov. 19, 2003).

From an engineering professor: "If anything the online conference gave the students an opportunity to learn about GIS and to realize engineers can create some important tools that have a positive impact on their own lives though GIS" (email communication, Nov. 19, 2003).

An excerpt from the Technology Director from Edenton-Chowan County: "I really enjoyed watching our students represent John A. Holmes so very well over the NCIH on GIS Live day, November 17. They did an outstanding job with the Hurricane Zeus project and the Millpond Project. I learned so much during the short time I was able to attend the broadcast. It was also an honor to know that Chowan County was a "premier" county in this project. It was also wonderful to see us able to broadcast to and be able to receive a broadcast from Columbus Georgia" (November 17, 2004).

The return rate for post conference surveys was low, approximately 20%, compared to our pre conference registration. This is not unusual for online surveys (Ilieva, Baron, & Healey, 2002). E-mail correspondence, the message board, meetings, and interviews became essential in the assessment, review, and revision process. In addition, the archived video, lessons, and other products used during the presentations were used to evaluate and modify the event from year to year.

How to Create an Interactive Communication Environment

We discovered that creativity was the key to a successful interactive communication environment. Just using the instant message board and encouraging questions from the web audience proved inadequate in the first year's event. Instead we began using "focus questions" which we directed to the audience before each presentation. We returned to these questions at the end of the presentations to begin the conversations. The host moderated the questions and then summarized the responses, feeding them back to the group for comments. This facilitated the discussion between the on-site audience and the Web audience. Each teleconferencing site had a moderator, but the questions from the message board were hosted from one of the sites. This was predetermined before the event. To further encourage web audience participation, we gave prizes throughout the day for answers to questions from previous presentations. In year four, we conducted an aerial photo hunt of mystery locations throughout the day. This proved to be very successful.

Another key to interaction was providing technical support for teachers, schools, and the general public. A technical support number and test link along with trouble shooting tips is provided continually on the web site to assist individuals with connecting. The process of how to access the GIS Live webcast is reviewed throughout the event. Families enjoyed watching their relatives present "live" from wherever they happened to be. One student's father was able to watch him present along with his Company from Iraq.
The greatest amount of interaction of the four events was during the Autumn Breeze: Hurricane Zeus Scenario when students were able to compare their communities to each other around a common problem scenario. As the schools and students presented from different teleconferencing sites, they thought about how their communities were alike and different. Other students from diverse geographical locations compared their communities to the ones being presented. For example, one student wanted to know why hurricanes rarely made landfall in Georgia. The answer came from another student in another state who had looked it up on the Internet!

Conclusions

Over time not only did the number of strands in the conference program decrease and the number of teleconferencing sites increase, but the web site and its design became a unifying and supportive framework for the ongoing event. An entry page to the Web Site was added, which on the day of the event has a direct link to the webcast. The GIS Live Preview section of the site explains the parts of the program: presentations/partnerships, team challenge, and pre and post activities and lesson plans. The eForum and Team Challenge have been combined with a focus on teacher professional development. A separate menu button was added for archiving past GIS Live events. The archives contain past programs, associated presentation materials and the archived streaming video. In the beginning we linked the archived streaming video to each presenter on the conference program page. This quickly became impractical. Now the video files are stored in one continuous steam that is hosted by ITS video service, NCIH. The on-demand content is viewable 24 hours a day and can be paused, stopped, and fast-forwarded during playback. An email from an educator in New Zealand wrote, "The 16-hour time difference and winter exams made participation difficult for us but it was wonderful to be able to sample some of the archived sessions".

The conference program page has evolved from a schedule to an interactive resource. Last years photographs, program, and speaker information are linked to this page. We added a description and activities so that those attending the online conference could prepare for and continue each presentation. In addition, after the event, we link the lesson plans, PowerPoint presentations, and other resources such as software and directions to the conference program to help others duplicate and continue the problem-solving activities. In the Educator's section of the web site, we continue to add activities according to experience-level for teachers. Teachers share their favorite related lesson plans in this section. This evolved design of the web site has become an important support system for the ongoing event.

Using a problem-solving and project-based focus for design of all the learning activities associated with GIS Live proved to be an important component that continued for the four years of events. The problem-solving framework was communicated and described to presenters and teachers. In year three, during the pre conference, a demonstration was done on how to incorporate problem-solving into teaching and learning. The investigations and sharing of information in the Team Challenges used the problem-solving framework. By asking questions such as what would happen if the problem was solved in a variety of ways, what did you find to be the best solution, and what are some other solutions or alternative explanations, those participating in the event were included in the presentations. Questioning and inquiry became a goal instead of the dissemination of information using technology.

Another goal, partnerships, became the cohesive glue that holds GIS Live together. In year one and two, groups of partners presented on different strands around a unifying theme. Partnerships included a GIS professional and/or a scientist, a teacher, and students. The eForum was held as a separate event after school. But in years three and four, larger partnerships were formed that continued through multiple presentations. The eForum became a part of the event during the day. For example, the presentations in year three were about climate change, focused on a hypothetical problem scenario that was based on an actual "practice" event in the state. In year four, the problem of open space in the state was addressed throughout the day, including during the Team Challenge. Another result of partnerships has been students who have become interns in various state and local agencies. Educators requested that those professionals presenting discuss their careers and possible internship opportunities for students. As a result, in years three and four, a GIS career presentation was added in which state partners and their student interns shared their experiences. It is evident that without these strong and diverse partnerships, GIS Live would not be possible.

An unexpected outcome has been that by connecting to other international events and national organizations that provide related programs, they have not only publicized our events, but have supported them by encouraging teachers and others to attend. During the live webcasts, these organizations have continually aired the events in their school libraries, office lobbies, at their own face-to-face events, and in their museums. The focus on partnerships has created a pool of individuals and organizations that are truly interested in supporting teachers in these innovative projects. Teachers have volunteered to become a part of these events, excited by the possibility of providing such a diverse and unique experience for their students.

We have learned that certain factors are essential when using telecommunication technologies and webcasting. We continually ask ourselves, who wants to know and how can we create an intensely interactive environment with the fewest number of barriers? For example, in year three we prepared teachers and students for the event through a pre teleconference and in year four we visited teachers and students in their schools, conducting GPS activities with the teachers and students which we videotaped and aired on the day of the event. Our goal has become to strive to effectively use technology in an effort to continuously support learning throughout the year instead of being centered on a

one day event. GIS Live has become more than a learning event but instead a journey, an experience of growth, for those who participate.

There are many questions that we would like to investigate as a result of four years of implementation using interactive technologies in teaching and learning. We would like to try using other technologies such as podcasting or mobile GIS or others that would support continuous learning. We want to continue to explore ways to maintain and support the program. How can we improve our evaluation and are there other impacts that we are not measuring? How can we offer more support to teachers, schools, and other groups that would like to incorporate geospatial technologies into learning? How can we better demonstrate problem-based, literacy-rich, interdisciplinary projects?

Those who have participated in GIS Live are convinced that this method of teaching and learning has great potential and tremendous future impact for education.

Tips for Success

1. Each teleconferencing site needs to have a host or moderator that is responsible for guiding the event at their location. The outside environment is included as a location or site and had its own host. All hosts had a loosely organized script which they followed throughout the day. Hosts were instructed on ways to best interact with the videoconferencing sites and the web audience. It was important that the hosts use wait-time and direct questions to different teleconferencing sites. For example, "NCA&T do you have any questions for the speaker?"
2. In addition to the host, other volunteers were divided up into teams that were responsible for the different groups during the day. The volunteer teams included those working with teachers and students, welcoming and registration, refreshments, photography and answering technical questions. The GIS Live partners provided volunteers for the events.
3. The technical volunteer team, which was in addition to the technician at the videoconferencing sites, helped the speakers troubleshoot during the day and assisted them with computer-related problems. They made the speakers feel welcome and reviewed important reminders when communicating in a studio setting.
4. Teacher and student groups practiced their projects and presentations before the GIS Live event. Some of the groups came to the teleconferencing sites to practice and others practiced from their schools. Students usually created a general script and order of presentation. This improved the comfort level of the students when sharing their presentations during the live events.
5. During the first event we hung banners in the teleconferencing room and outside. These banners proved to be very distracting to the audience. A better idea was to have t-shirts for everyone to wear that was presenting at the event. We gave them the t-shirts when they arrived and the speakers put them on over their clothes. We mailed t-shirts to each teleconferencing site, including Brazil, for the students and teacher to wear. To facilitate communication, large-print nametags were worn by everyone involved at the event.

6. Those participating in videoconferencing needed an orientation to the room. This was done by the host. Instructions were given regarding how and where to speak depending on the placement of the microphones. The furniture in the rooms was arranged in discussion format with tables and chairs in a half circle facing the speaker and the camera. This avoided anyone looking at the back of someone else's head or their face being blocked from the camera.
7. Tips for speakers were added to the web site. The general guidelines were reviewed with each speaker before they presented by e-mail or phone. If the speaker was using a PowerPoint presentation, these were e-mailed ahead of time and loaded onto one computer at the teleconferencing site. PowerPoint presentations were checked and changed if necessary to ensure that they were in the correct format for webcasting.
8. We discouraged the use of PowerPoint presentations in general because we found that they did not facilitate interaction. If PowerPoint was used, it was usually only a part of the presentation or fewer slides were used with mostly graphics and a few words. The better presentation style when using teleconferencing is a skit, play, or outside activity. It is more like a "show and tell" and we found actual objects to be more effective. We found that maps and pictures worked better under a document camera rather than on a PowerPoint slide. Placing focus questions or other information under the document camera proved to be an effective way in general for the host to communicate with the web audience. Make sure your host has some blank paper and a marker for such communications.
9. Seeing the speaker is very important when using telecommunications. Camera close-ups and eye contact focus the attentions of the viewers. We told speakers to picture hundreds of people in an auditorium when looking at the camera. An audience at the teleconferencing sites helped the speakers. The speakers did not like seeing themselves on TV while they were presenting. However, the audience at the teleconferencing sites did enjoy seeing themselves on TV. Place the TVs so the audience can see themselves but the speaker cannot see h/herself.
10. When using teleconferencing and webcasting at the same time you need to think about both audiences. The host should be careful to be inclusive of both by referring to them by name. For example, "Susan from Oklahoma would like to know……." or we have questions from four states, let's see what Kansas would like to know". If a speaker was unable to answer all of the questions, they agreed to answer the questions later through e-mail and/or via the website. We realized that an effective way to communicate with the web audience was to use the web site throughout the live event. We showed the web audience where to find the schedule, instructions on how to access, and how to link to the live webcast approximately every hour using the web site throughout the event.

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